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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,651	09/23/2003	Toshimitsu Tetsui	243028US0DIV	9115

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EXAMINER

MORILLO, JANELLE COMBS

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/667,651

Applicant(s)

TETSUI ET AL

Examiner

Janelle Combs-Morillo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/789,540.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- Paper No(s)/Mail Date 9/23/03, 12/23/03

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP2000-199025A (JP'025) in view of Matsuo (US 5,348,702).

JP'025 teaches a TiAl intermetallic compound base alloy with lamellar grains, said alloy comprising 44.5-48.5% Al, and wherein the amount of γ and α lamellar structure present depends on heat treatment (see JP'025 at [0019]). JP'025 teaches holding said alloy at 1300-1400°C (which falls within the α phase range of said alloy), for ≥ 10 minutes followed by quenching to 1000°C at 20-500°C/min (see JP'025 at cl. 6, 9, 15), and hot working such as forging or extrusion [0022], thereby obtaining an alloy with excellent strength and ductility properties (see[0045]). JP'025 does not teach the forging temperature.

However, Matsuo (who is also drawn to TiAl alloys) teaches superior properties result when a TiAl alloy is subjected to a heat treatment at (1000°C- solidus temperature) followed by thermomechanical processing (such as forging, Ex. 1) at temperatures $>1100^\circ\text{C}$. It would have been obvious to one of ordinary skill in the art to forge at temperatures $>1100^\circ\text{C}$, as taught by Matsuo, for the process of making a lamellar TiAl alloy as taught by JP'025, because Matsuo

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teaches said thermomechanical processing obtains an alloy with outstanding superplasticity (column 14 lines 39-41).

Concerning claims 9, 10, 12, and 13, as stated above, the combination of JP'025 and Matsuo teach said heat treatment parameters.

Concerning claim 11, though the prior art does not teach the structure of the device used to perform the instant method step of holding at the holding temperature, it is well settled that where the prior art clearly teaches the process sought to be patented, a difference in the structure of the apparatus used to carry out the process, or any of its steps, cannot be considered as a patentable limitation therein (In re Sweeney et al. 72 USPQ 50).

Therefore, because the disclosure of JP'025 and Matsuo teach a method of making a TiAl by heat treating and working substantially as presently claimed, JP'025 and Matsuo are held to create a prima facie case of obviousness of the presently claimed invention.

3. Claims 8-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masahashi et al. (US 5,370,839).

Masahashi teaches a process of working and heat treating a TiAl alloy with 47.5-52at% Ti and 1-5at% Cr, balance (42.5-51%) Al (column 2 lines 65-68- column 3 lines 1-5), which overlaps the instant alloy composition. Said alloy is processed by homogenization heating to (1273K – solidus temperature) for 2-100 hrs (column 5 lines 44-46), which broadly overlaps the α temperature range as well as the $\alpha + \beta$. Masahashi teaches said homogenization step is followed by a thermomechanical heat treatment using a cooling rate of $\geq 10\text{K/min}$ (column 6 line 43) and a temperature of 1173K- solidus temperature (column 6 line 11), which overlaps the predetermined working temperature. Masahashi teaches the thermomechanical working can be

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forging (column 7 line 4). Because the process of heat treating and thermomechanically working as taught by Masahashi broadly overlaps the presently claimed parameters, and applicant has not shown specific unexpected results/criticality of the presently claimed range with respect to said overlap, it is held that Masahashi has created a prima facie case of obviousness of the presently claimed invention.

Evidence of unexpected properties may be in the form of a direct or indirect comparison of the claimed invention with the closest prior art which is commensurate in scope with the claims. See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) and MPEP §716.02(d) - §716.02(e).

Concerning claims 9, 10, 12, 13, 15-18, as stated above, Masahashi teaches said heat treatment parameters that overlap the presently claimed parameters.

Concerning claim 11, though the prior art does not teach the structure of the device used to perform the instant method step of holding at the holding temperature, it is well settled that where the prior art clearly teaches the process sought to be patented, a difference in the structure of the apparatus used to carry out the process, or any of its steps, cannot be considered as a patentable limitation therein (*In re Sweeney et al.* 72 USPQ 50).

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs-Morillo whose telephone number is (571) 272-1240. The examiner can normally be reached on 8:30 am- 6:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JCM

October 12, 2005

ROY KING 
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700